THE IMPACTS OF CLIMATE CHANGE ON PUBLIC HEALTH IN INDONESIA: ACTION IS NECESSARY, FEASIBLE AND DESIRABLE

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ABSTRACT

The global climate has always fluctuated. Millions of years ago, some parts of the world that are now quite warm were covered with ice, and over more recent centuries, average temperatures have risen and fallen in cycles, as a result of fluctuations of solar radiation, or the periodic eruption of volcanoes.Societies around the world are becoming increasingly focused on the looming effects of climate change. Climate change threatens to undermine Indonesia's efforts to combat poverty. Its impact is intensifying the risks and vulnerabilities facing poor people, placing further stress on already overstretched coping mechanisms. In effect, climate change is holding back the efforts of poor people to build a better life for themselves and their families. The aim of this essay gives consideration to the impact of climate change on population health in Indonesia. This essay critically analyses the impacts of climate change on population health in Indonesia and considers how to reduce the potential human impacts of climate change.

Key Words : Impacts, Climate Change And Public Health

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Climate Change, Population Health And Environment

Recently, climate changes have been caused not just by natural events but also by the activities of human beings, and this will continue in the future. Accelerated economic development is having a serious impact on the global climate, burning large quantities of coal, oil and wood as fuel, and cutting down forests. The damage is caused principally through the production of 'greenhouse' gases. This term is applied because they have an effect similar to the glass roof of a greenhouse, allowing the sunlight to penetrate the atmosphere so as to heat up the earth, but they prevent part of the energy from being radiated back into space. As a result, the earth and its atmosphere are slowly heating up [1].

Indonesia is already a significant emitter of greenhouse gases due to deforestation and landuse change, estimated at 2 million hectares per year and accounts for 85 per cent of the country's annual greenhouse gas emissions. It is also a serious coal producer and user in the region [2,3].

Environmental Change

Over the past 30 years, 30% of the world's natural environment has been destroyed. Part of the problem can be traced to unsustainable rates of consumption in rich countries that are creating climate change and ozone depletion. This consumption requires increased environmental resources and produces toxic waste products [4,5].

Globalization leads to economic growth, which in turn leads to development and makes societies more able to live sustainably and deal with waste products in an environmentally friendly way. On the other side of the debate, it is argued that economic growth leads only to greater environmental damage as sustainable development fails to take place. In addition, environmental damage causes health risks. Poor countries contribute relatively little to pollution that causes environmental and climate change. Nevertheless, they are increasingly burdened with economic and health costs.

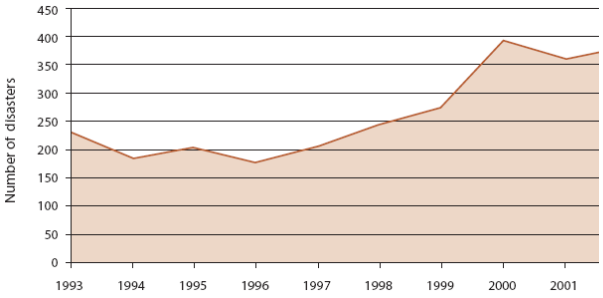

Figure 1: Number of Disaster Indonesia, 1993 – 2002.
Source: UNDP INDONESIA, 2007

In recent years, these extreme climatic events have become more frequent and their impact has been more severe in Indonesia (Figure 2). In figure 2, the peak of disasters happened in Indonesia on 2000, such as flood, earthquake and lack of water supply in

particular areas in Indonesia. The figure shows that the trend of disasters has increased every year in Indonesia. It seems clear that Indonesia is already experiencing climate change and that the consequences could be felt for many generations to come.

Population Health

Climate change is a significant and emerging threat to public health, and changes the way we must look at protecting vulnerable populations [4,5]. Human populations continue to grow and human societies, cultures, and economies are developed. As human populations have become more interconnected against the background of globalize-tion in recent decades, the collective human impact on the earth has an increasingly global and a systemic aspect. Issues like climate change, freshwater deficits, and degradation of food producing systems have now moved to the foreground. Today, it is evident that these impacts threaten not only economic systems, environmental assets, infrastructural integrity, tourism, and iconic nature, but also the stability, health, and survival of human communities.

At the same time as human development was expanding, environmentally sustainable development was declining in many countries. The focus was on how to reconcile the environmental sustainability with social economic development. That orientation afforded little stimulus to considering why, in human experiential terms, achieving such a balance is not an end in itself, but is a prerequisite for attaining human security, wellbeing, health, and survival [6].

The Impact Of Climate Change On Population Health In Indonesia

The climate change impacts are noticeable throughout the AsiaPacific region. More frequent and severe heat waves, floods, extreme weather events and prolonged droughts will continue to lead to increased injury, illness and death. Continued war-ming temperatures will also increase the number of malaria and dengue fever cases and lead to an increase in other infectious diseases as a result of poor nutrition due to food production disruption[3].

Climate variability and change cause death and disease through natural disasters, such as heat-waves, floods and droughts. In addition, many major diseases are highly sensitive to changing temperatures and precipitation. These include common vectorborne diseases such as malaria and dengue, as well as other major killers such as malnutrition and diarrhea. Climate change already contributes to the global burden of disease, and this contribution is expected to grow in the future [7].

The combination of high population density and high levels of biodiversity, together with a staggering 80,000 kilometers of coastline and 17,500 islands, makes Indonesia one of the most vulnerable countries to the impacts of climate change [2,3]. Indonesia and other countries have been cutting down millions of hectares of forests and destroying wetlands. This has caused increased carbon monoxide emissions and vulnerability to the impact of climate change in the health of the population.

The temperature rise may not seem very great, but in some countries such as Indonesia, it could have a major impact, and particularly on our poorest people. The impact is very difficult to predict. The global climate is a very complex system and global warming will interact with many other influences, but in Indonesia, it will make many existing climatic problems worse. The climate change impact in Indonesia relates to hazards, including floods, droughts, storms, landslides and wild land fires. These will now become more frequent or more severe.

Climaterelated hazards in Indonesia are also caused by the location and movement of tropical cyclones in the eastern south Indian Ocean. In some parts of Indonesia, this can result in very strong winds and heavy rainfall that can last for hours or days.

According to WWF [8], the impact of climate change on population health in Indonesia is: Increased frequent and severe heat waves, floods, extreme weather events, and pro longed droughts leading to increased injury, illness, and death; Increased vectorborne infections (e.g., malaria and dengue), an expansion of water-borne diseases, such as diarrhea, an increase in infectious diseases, poor nutrition due to food pro-duction disruption, illhealth due to social dislocation and migration, and increased respiratory effects from worsening air pollution and burning ;Increased diarrhea disease and endemic morbidity and mortality ;Rise in severe respiratory problems following an increase in the frequency and spread of wildfires that release toxic gases such as carbon monoxide, ozone, nitrogen dioxide and hydrocarbons; Rise in the number of dengue fever cases during the rainy season; Increased waterborne diseases such as cholera and diarrhoea diseases.

No one can escape from climate change. But the effects will be felt more acutely by the poorest people, who are living in the most marginal areas that are vulnerable to drought, for example, or to floods and landslides. Since they are likely to be working in agriculture or fisheries, their livelihoods are particularly climate sensitive suffering from poverty such as not affordable to get health access. They also have very few resources to fall back on, so any disaster could cost them their few possessions. In periods of stress, they may be forced to sell off land or other assets for example, livestock or farming equipment-

making it very difficult to sustain their livelihoods. The effect on poverty can also be viewed through the lens of the Millennium Development Goals, whose achievement is threatened by climate change [1].

The goal of the Millennium Development Goals is Eradicate extreme poverty and hunger. The potential impacts of climate change on the MDGs related climate change are: Degradation of the forests, fish, pastures, and crop land that many poor families depend on for their food and livelihoods; Increased homelessness among poor people, lack of water supply, and health problems, which will undermine their ability to earn a living;Exacerbation of social tensions over resource use, which can lead to conflict, destabilizing lively hoods and forcing communities to migrate [4].

The impact on communities in coastal areas in Indonesia: climate change has already undermined lively hoods in many islands in Maluku, for example, where fishermen say they can no longer predict the right times or places to catch fish because of the different climate pattern. The rising sea levels could also inundate many of the shrimp and fish ponds in Java, Aceh and Sulawesi [5].

As a vast archipelago of over 17,000 islands and with 80,000 kilometers of coastline, Indonesia is extremely vulnerable to sea level rise. Many sections of the coast have been vulnerable by erosion. It caused by human activity such as the building of jetties and sea walls, the damming of rivers, sand mining, and the destruction of mangrove forests for wood.

REDUCTION OF THE CLIMATE CHANGE IMPACT: *Action is* Necessary, Feasible And Desirable.

WHO[4] makes clear that the impact of climate change on these vulnerable places highlights the importance of building and reinforcing public health infrastructure, implementting an epidemiological surveillance systems and increasing capacity to respond to vector-borne disease.

Reduction of climate change impact in Indonesia through many scenarios:

Short Term

Prevent the spread of communicable diseases

Improving and implementing epidemiological surveillance systems for communicable diseases such as vector-borne disease, water-borne disease and non communicable diseases such as malnutrition, as a result of climate change.

Implementation and enforcement of legislation

The Implementation and enforcement of legislation in Indonesia is very weak such as in forestry. The government has to strengthen policy and legislate to control illegal logging and forest burning for farming.

Business Action

It is necessary to build progressive partnerships with businesses and industries to identify ways how they can reduce their emissions, and how they can influence their sectors and markets to become super-energy efficient and carbon-neutral.

Build Partnership With Industrial And Other Users For Enforcement Implementation Climate Change Prevention

The Indonesian government works with users to set realistic goals and to enforce the climate change prevention program. The government places the responsibility for compliance on the user.

Long Term

Forestation

Forests are a natural store of carbon. For example, oil palm trees are environmentally friendly. They remove carbon dioxide from the air and releases oxygen to the atmosphere. At the same time, stands of oil palm trees form renewal resources for the pulp and paper industry. In Australia, project plantation resulted in 1400 hectares of sawlog plants, which will absorb around 500,000 tonnes of CO2 over the next 30 years.

Replacement of CFCs with harmless substances and cleaner technology

Additional research is needed so benefits provided by CFC use can be retained while using harmless and clean technology. However, beware of new chemicals to replace CFCs. While replacements, such as the HCFCs, have been developed to reduce harmful effects on the ozone layer, new substances may have undiscovered negative effects of their own. For instance, although HCFCs appear to destroy the ozone layer more slowly than CFCs, they still affect the ozone layer, and may also increase climate change.

Emission Reductions

The industrialized countries must reduce their current levels of CO2 emissions – the emissions should peak and start to reduce within the next 5 to 8 years. This is especially true for the power sector which is the largest polluting sector (40% of global climate dama-ging emissions). Investment in energy efficiency, at all levels from generation to actual use, is by far the most immediate, effective, and eco-nomically beneficial way to reduce emissions. The model assessed the potential for a variety of low-emission technologies such as wind35, hydro36, bioenergy, geothermal, solar PV, wave and tidal, and solar

thermal. A rapid scaling-up of these technologies is needed, but within a set of environmentaland social constraints to ensure their sustainability [9].

Communities and Nature

Communities and conservation areas adapt to a changing climate. Actions such as restoring damaged forests, wetlands, and other habitats increase their resilience, help protect nature, and generate income for local people. Without such a response, climate change could well be the final blow to already stress ecosystems and the human populations that depend on them.

CHALLENGE

The challenges on climate change in developing countries are financial assistance to some developing countries such as Indonesia is too slow. Indonesia as a developing country not has experts and funding to carry out effective reduction programs. Funds are available under the Montreal Protocol, but some countries do not have information on how to access these funds.

CFC import goals are difficult to enforce. Even using Customs staff and capabilities, restrictions on imports are difficult to enforce. Mislabeling, both nonreporting of CFCs, and incorrect labeling of other chemicals as CFCs has complicated import enforcement.

The enforcement of reduction goals for user groups like small firms and owners of home appliances and refrigerators is difficult. Such as, importance of developing and maintaining links across disease surveillance agencies: human, agricultural and wildlife health.

The other challenges are lack of cross disciplinary approach between environmental sector and public health, both at departmental level and research level. Nevertheless, improving awareness, surveillance, monitoring and education for health professions & the public.

CONCLUSION

This essay analyses the impacts of climate change on population health in Indonesia. Indonesia is particularly vulnerable to the effects of climate change, which include rising sea levels and erosion of coastal areas, increased frequency and intensity of extreme weather events, species extinction, and the spread of vector-borne diseases.

Reduction of climate change impact in Indonesia is through many scenarios. In the short term, the scenarios are to prevent the spread of communicable diseases, implementation and enforcement of legislation, implementtation and enforcement of legislation, and business action. In the long term, the scenarios are forestation, replacement of CFCs, emission reductions, and communities and nature. These scenarios of climate change face many challenges that need collaboration, coordination and cooperation from Indonesian Government, local and international communities.

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